

APPENDIX #2

VIRGINIA GIS REFERENCE BOOK

General Application Name: **SCHOOLS**

Product / Service / Function Name: **SCHOOL BOUNDARY REDISTRICTING**

P/S/F Description: Developing citywide or countywide school districting boundaries.

Product / Service / Function

1. Spatial Data –
Minimum Requirements – Student point locations, Census block boundaries, Road centerlines, School point locations
Optional Requirements – Hydrography
2. Attribute Data –
Minimum Requirements –
 - Student point locations Attributes: Student ID, Student First Name, Last Name, Student Address
 - Census Block Boundaries Attributes: Population, Population broken up by age group as done by the U.S. Census Bureau, Demographic Information as provided by the Census Bureau**Optional Requirements** –
 - Student point location Attributes: School Attending
3. Data acquisition Options (integrated with VBMP digital orthos)
 - Data may already exist in database format (i.e. Excel, Access, Text File), as an AutoCAD file or in a GIS format.
 - Appropriate agencies should be contacted to see if such data exists and in what format. Existing data can be converted to the appropriate GIS format.
 - If data does not exist, it can be created through editing techniques in GIS. The original information must first be collected from the appropriate individual associated with the data of interest. The information then can be converted to GIS format.
 - Techniques used for data development can include heads up digitizing using digital orthophotography when appropriate in regards to scale. Building locations can be picked up with imagery, as well as major hydrographic features.
4. Data conflation Options (integrated with VBMP digital orthos)
When necessary, school locations and road centerlines can be conflated to the digital orthophotography in order to increase spatial accuracy of the locations.

5. GUI / programming options
Programming applications may be developed to aid in the grouping of census blocks and displaying resulting statistics of specified attributes that may be important in the development of school districts.
6. Internet Functionality and options
Not Applicable
7. **Minimum Technical Requirements –**
 - ArcView 3.x or
 - ArcGIS
 - Computer with 1GHz processor, 256 MB RAM, 20GB hard drive
 - Trained GIS personnel**Optimum technical requirements -**
 - Computer equipped with 2 GHz processor, 512 MB RAM, 40 GB hard drive.
 - ERDAS Imagine
 - Full-time GIS Analyst
8. Administrative/Management Requirements
Tasks associated with the development of a schools districting project will depend on the specific goals of the project as determined by the locality. Some tasks that may be involved include:
 - Development of the needs and goals of the project.
 - Project Coordination and Planning
 - Data Collection
 - Student Geocoding
 - GIS Data Development
 - GIS Application Development
9. Cost – Cost/Benefit
The benefit of a GIS approach to school districting is the capability to integrate multiple data sources into one analytical effort in the development of school districts. Another important benefit is the visual capability of the GIS to display districts in relation to students, population and road centerlines.
The cost ranges below are highly variable. Cost is dependent on such things as size of the locality, desired application functionality, required scale and accuracy of the data, existence and completeness of data, acquisition methods employed, system set up and training.
Cost may reflect the following ranges:

Project Coordination and Planning	\$5,000 to \$10,000
GIS Data Development	\$20,000 to \$150,000
Application Development	\$5,000 to \$60,000
10. Standards / Guidelines Summary
A structured and consistent data model should be developed for each data set.

Data needs to be compiled from a reliable, accurate source. Data compiled from 1": 200' and 1": 400' scale digital orthophotography will have spatial accuracies approaching ± 7 to 15 feet respectively. All data should exist in a consonant projection.

11. Startup Procedures/Steps

Evaluate specific needs and goals of project.

Evaluate software, training and technical needs of the project.

Procure specified data as discussed and evaluated necessary by appropriate personnel involved in the project.

Create data that cannot be directly procured using methods such as heads up digitizing on orthophotography to pick up the data points, geocoding and basic editing methods.

Create a working GIS project that incorporates all data.

Create a working application, if necessary, to execute user defined needs of their system.

12. Estimated time line and/or implementation (stand alone) schedule

GIS Project set up, data development and data procurement can take anywhere from one to 12 months depending on multiple factors, including cooperation, completeness of data, size of locality, specific needs and goals as defined by the locality and work force available for the project.

- Project Coordination and set up can take upwards of one to several months.
- GIS Data Development can take one to several months.
- Application Development can take one month to one year.

13. Best Practice Examples in Virginia

- City of Richmond School Redistricting Project
- Dinwiddie County School Redistricting Project.

For further information regarding these projects, please contact Russell Minich at (804) 897-7927.